

### Remarks

In the Office action mailed September 30, 2004, the drawings were objected to for failing to comply with 37 C.F.R. § 1.84(p)(5). See Office action, 2. The specification was also objected to because of informalities, particularly spacing of the words of the specification. See id. at 2-3. Claims 2-3 and 6-10 were rejected under 35 U.S.C. § 112, second paragraph for failing to particularly point out and distinctly claim the subject matter regarded as the invention. See id. at 3. Claims 1 and 4 were rejected under 35 U.S.C. § 102(e) as being anticipated by Whittaker et al. (US Patent No. 6,483,345). See id. at 4. Claim 5 was objected to due to informalities. See id. Claims 3 and 6-10 were held to be allowable if rewritten to overcome their rejections under 35 U.S.C. § 112 and claim 5 was held to be allowable if rewritten in independent form. See id. at 5. Each of these objections and rejections will be discussed below.

### Drawings

Applicants have included an amended Fig. 3 with this Amendment. The amended figure includes the following changes:

1) "ISENSE1" and "ISENSE2" have been replaced with "VSENSE1" and "VSENSE2," respectively; 2) reference sign  $I_0$ , as mentioned in the description, has been added; and 3) reference sign "400" has been added to the figure to identify the IC circuit, as described in the originally-filed specification. See Application, p. 3, ln. 26-29.

The Applicants have amended the description so that the description and Fig. 3 are in agreement. The current source  $I_1$  is now mentioned in the description as being in series with signal source 410. Also, the resistor identified as "446" in the description is now identified as resistor 442, as identified in Fig. 3.

Applicants believe the amended figure is in compliance with 37 C.F.R. § 1.84(c). An annotated copy of the

original drawing and a replacement sheet incorporating the changes discussed above have been included with this Amendment in compliance with 37 C.F.R. § 1.121(d).

#### *Specification*

Applicants have amended the specification to respond to objections raised in the Office action and to correct errors. Although a line spacing of 1½ is permitted under 37 CFR § 1.52(b)(2), as a courtesy to the Office, Applicants are including a double-spaced version of the original specification in response to the objection in the Office action that the original specification's spacing made reading and OCR difficult in this particular instance. In addition, Applicants have amended the specification as discussed above in the section titled "Amendments to the Specification" to correct errors, such as typographical errors or failures to correctly identify elements of Fig. 3 in the description, in the original specification. Applicants believe the replacement specification and these amendments overcome the objections to the specification. The replacement specification is submitted in compliance with 37 C.F.R. § 1.125(c) in that all the amendments made relative to the original version are indicated with markings showing the changes.

#### *§112*

Applicants have amended claims 2-3 and 6-10 to overcome rejections based on § 112, second paragraph. Claim 2 has been amended so that the limitation "a drain of the third NMOS transistor being coupled to a third NMOS transistor" now reads "a drain of the third NMOS transistor being coupled to a third resistor." Claim 3 has been amended so that the "fourth resistor" is now the "first resistor" and the "fifth resistor" is now the "second resistor." Claim 6 has been amended so that the limitation "the current mirror means" in line 8 is now "the current source means," for which there is sufficient antecedent basis.

Applicants have amended claims 2, 3, and 6 to comply with the requirements of § 112, second paragraph. Claims 7-10 were rejected under § 112, second paragraph for their dependency from claim 6. Applicants believe the amendments to claims 2-3 and 6 bring these claims as well as claims 7-10 into compliance with § 112, second paragraph.

§102

Claims 1 and 4 were rejected under 35 U.S.C. § 102(e) as being anticipated by Whittaker et al. See Office action at 4. In order to anticipate a claim, a reference must teach all the elements of a claim. See Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631 (Fed. Cir. 1987). Applicants contend that Whittaker et al. does not teach all the elements of claims 1 and 4 and therefore these claims are novel.

Whittaker et al. does not teach an integrated circuit that can sense and amplify a low voltage signal which has been superimposed on a high voltage, as Applicants do. Whittaker teaches a circuit that takes a pair of common mode signals referenced to one supply voltage and re-references these signals to a second, lower, supply voltage in order to allow bipolar transistors to operate at speed, in other words, to achieve high speed level shifting for low voltage output. See Whittaker et al., col. 1, ln. 18-46. A re-referencing circuit receives a pair of common mode logic signals and re-references these to a lower supply voltage, producing intermediate output signals that do not exceed the lower supply voltage. See id., col. 5, ln. 44-60. An additional control loop may be added to the circuit which stabilizes the mean output voltage by sensing the mean voltage of the outputs, comparing it with the desired reference voltage, and adjusting it accordingly. See id., cols. 5-6, ln. 63-14.

In contrast, Applicants teach an integrated circuit which can sense and amplify a low voltage signal which has been superimposed on a high voltage. Applicants teach a signal source which produces a signal consisting essentially

of a high voltage upon which a small voltage signal is superimposed. See Application, claim 1. A current source means configured to be coupled to the signal source creates a reference current based on the high voltage and a differential current based in part on the small voltage signal. See id. A means for current-to-voltage conversion configured to be coupled to the current source means eliminates the high voltage and converts the portion of the current caused by the small voltage signal that flows through an external sensing resistor into a voltage proportional to the small voltage signal. See id.

Whittaker et al. fails to teach several elements of Applicants' claim 1. These elements include: 1) a signal source for producing a signal consisting essentially of a high voltage upon which a small voltage signal has been superimposed; 2) a current source means for creating a reference current based on the high voltage and a differential current based in part on the small voltage signal; and 3) a means for current-to-voltage conversion which converts the portion of the differential current caused by the small voltage signal into a voltage proportional to the small voltage signal.

Whittaker et al. does not teach a signal source for producing a signal consisting essentially of a high voltage upon which a small voltage signal has been superimposed. Whittaker et al. teaches an integrated circuit featuring high and low power supply voltages which receives two input signals. According to Whittaker et al., the signal "is typically a differential Current Mode Logic (CML) signal with a swing of about 250 mV with respect to the positive supply rail." Whittaker et al., col. 4, ln. 37-38. This is different from Applicants' claimed element where a differential small voltage signal is superimposed on the high voltage. Since Whittaker et al. fails to teach this element of Applicants' claim, Applicants' claim is not anticipated by Whittaker et al.

Whittaker et al. also does not teach a current source means for creating a reference current based on the high voltage and a differential current based in part on the small voltage signal. While Whittaker et al. does teach means for producing mirror currents, Whittaker et al. does not teach means for producing a reference current based on the high voltage and a differential current based in part on the small voltage signal. Since Whittaker et al. does not teach this element of Applicant's claim, claim 1 is novel.

Finally, Whittaker et al. does not teach a means for current-to-voltage conversion which converts the portion of the differential current caused by the small voltage signal into a voltage proportional to the small voltage signal. As noted above, Whittaker et al. teaches a means which stabilizes the mean output voltage (which does not exceed the lower power supply) of the re-referenced voltages by sensing the mean voltage of the outputs, comparing it with the desired reference voltage, and adjusting it accordingly. Whittaker et al. does not teach, as Applicants do, a means which is able to detect a portion of a differential current due to the superimposed small voltage signal and convert the current caused by the superimposed voltage signal to a voltage proportional to that superimposed small voltage signal. Therefore, Applicants' claim 1 is novel.

Claim 4 is a dependent claim of Applicants' independent claim 1. As shown above, Applicants' claim 1 is novel. Therefore, dependent claim 4 is novel for at least the same reasons as claim 1.

### *Objections*

Claim 5 was objected to in the Office Action for informalities. See Office action at 3. Applicants have amended this claim and believe these informalities have been removed from the claim.

### *Allowable Claims*

The Office Action stated that claims 3 and 5 would be allowable if they were rewritten in independent form and

that claims 6-10 would be allowable if amended to overcome the § 112 rejection discussed above. See id. at 5. Applicants have amended claim 6 to overcome the § 112 rejection; therefore, claims 6-10 are in allowable form. Applicants decline to rewrite claims 3 and 5 in independent form at this time since Applicants have shown that claim 1 is not anticipated by Whittaker et al. and therefore these dependent claims of claim 1 are novel for at least the same reasons claim 1 is novel.

Conclusion

Applicants have amended the claims, specification, and Fig. 3. Applicants assert that 2-3 and 6-10 now comply with the requirements of § 112, second paragraph, and that claims 1 and 4 are not anticipated by the cited reference. Applicants request a notice of allowance for this application.

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Amendments to the Drawings

Fig. 3 has been amended. "ISENSE1" and "ISENSE2" in the original drawing have been amended to read "VSENSE1" and "VSENSE2" as disclosed in the specification. Reference current  $I_0$  has also been added to the figure as described in the originally-filed specification. See, e.g., Application, p. 6, ln. 16-18. Finally, reference number "400" has been added to the figure to identify the IC circuit, as described in the originally-filed specification. See id., p. 3, ln. 26-29. A copy of the original drawing with suggested changes and a replacement sheet incorporating the suggested changes have been included with this response to the Office action in compliance with 37 C.F.R. §§ 1.84(c) and 1.121(d).



